RLS &
WNE CLIENT V.5.0

RX8200 CONFIGURATION GUIDE

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REUTERS

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1 INTRODUCTION

The RX8200 Receiver is a component of the MPEG-4 AVC/ MPEG-2/DVB compliant range of Ericsson equipment designed for use by broadcasters and distributors of video, audio and data Services over satellite.

The Satellite Receiver interfaces directly to a Low-Noise Block (LNB) on a satellite dish and takes an intermediate frequency (IF) input in the band 950 - 2150 MHz (L-band). The unit can provide dc power and polarisation switching to the LNB.

The receiver can be tuned to a Reuters satellite channel frequency and polarisation. The input is down-converted via an LNB to provide an L-band input to the Receiver. The received Reuters satellite channel contains two services within the Receiver's demultiplexer. These are configured to select a single video Service (**R**euters **L**ive **S**ervice) and other audio/data (**W**orld **N**ews **E**xpress) components and present them at the receiver output(s).

In short, this receiver processes both **RLS** and **WNE** content for Reuters Broadcasting clients.

1.1 FRONT PANEL CONTROLS

The physical interface for the Front Panel consists of an alphanumeric LCD display, pushbuttons, and a status LED that can used to set-up and monitor the unit. User input is via six pushbuttons comprising four cursor pushbuttons: Left, Right, Up, and Down; and two edit control pushbuttons: Edit and Save.

Each pushbutton has an integral green LED except Save, which has an integral red LED. When lit these LEDs indicate to the User which pushbutton is currently active.

1.2 FRONT PANEL LEDS

Receiver status as follows:

A **red** status LED is used to indicate an RX8200 Receiver fault condition, e.g. a missing or faulty input signal. It should be off for correct operation, although it may be lit briefly during power up.

An **orange** status LED is used to indicate that the RX8000 Receiver is locked to a Transport Stream, but also indicates incorrect conditions or incorrect system functioning.

A **green** status LED is used to indicate that the RX8000 Receiver is locked to a Transport Stream and also indicates correct conditions and correct system functioning.

2 RECEIVER INSTALLATION AND CONNECTION

Mount the RX8200 in a 19-inch standard rack in an MCR or CER that has an RF satellite feed to Reuters RLS/WNE.

2.1 REPLACING AN EXISTING EMR SATELLITE RECEIVER

There will be many instances where the RX8200 unit is being installed on a client site to replace an existing EMR satellite receiver. In such cases it is very important to note the following:

- There will be a change between MAC addresses on each receiver model which will interrupt the decryption of video across WNE.
- This process should be managed in conjunction with the ICA Team in London. See Appendix 1 at the end of this guide for help.
- There is a separate management interface required for the RX8200 receiver. (On the EMR receiver, both WNE data and receiver management are controlled over one ethernet connection).
- There may be more than 1 WNE PC/Server connected to an existing EMR receiver.

2.2 RF CONNECTION

Connect an RF coaxial cable that's carrying the Reuters RLS/WNE signal to **RF In 1** on the rear of the RX8200. This may be the existing RF cable that is connected on the rear of an existing EMR receiver. See **Figure 3** of an EMR.

Figure 1. RF Connection on RX8200.

2.3 IP DATA CONNECTION

Connect NIC 2 on the WNE server (labelled *Gb 2* on a Dell Server) to the RX8200 (labelled *IP Out 2*) using an ethernet cable. This connection is for carrying WNE data only. This connection tends to be the on board NIC of a WNE PC as shown in **Figure 3**.

Figure 2. IP Output No 2 on RX8200 & WNE NIC Connection on a Dell Server.

EMR Receiver
RF Connection (left) & Ethernet 2 Connection (right)

Lenovo/IBM PCs [Model M51, M52 & M58]
On Board NIC Connection – Satellite Receiver

Figure 3. Existing EMR Receiver and On Board NIC Connection – M51, M52 & M58

2.4 MANAGEMENT CONNECTION

Default IP Address - **192.168.4.4**

Connect a second network cable to the management port (labelled *CONTROL 2*) on the RX8200 unit and connect this cable to the clients network. The IP address for this port can be set from the front panel of the receiver. It is through this interface that the RX8200 Browser page can be accessed for editing and configuring all receiver management functions.

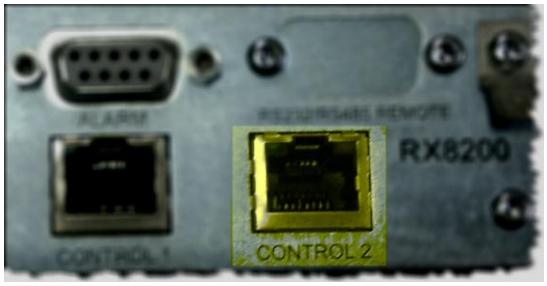


Figure 4. Management Control Port-RX8200

Alternatively, connect the management output from the RX8200 to the 2nd NIC on a WNE PC or Dell Server for local configuration as outlined graphically in **Figures 7** and **8** later in this document.

3 GLOBAL SATELLITE COVERAGE

3.1 SATELLITE PARAMETERS

Global satellite coverage for the WNE and RLS services are transmitted via the regional satellite providers listed below. You must ensure that your satellite dish is actually positioned to point to the relevant location.

The frequency of the LNB used in your installed satellite dish will also be required during the configurations that follow in this document.

	North America	Central America	South America
Satellite	Satmex 6	Satmex 6	Satmex 6
Video Standard	525 - NTSC	525 - NTSC	525 - NTSC
Position	113° West	113° West	113° West
Transponder	15K	15K	15K
D/L Frequency	11992.65 MHz (Ku-Band)	11992.65 MHz (Ku-Band)	11992.65 MHz (Ku-Band)
Symbol Rate	10.8 MS/s	10.8 MS/s	10.8 MS/s
FEC	½	1/2	1/2
Polarization	Horizontal	Horizontal	Horizontal

Figure 5 Satellite coverage for North, Central and South America

	Europe	MEA	Asia
Satellite	SES-4	Amos 5	Asiasat 5
Video Standard	625 – PAL	625 - PAL	625 – PAL**
Position	22° West	17.0° East	100.5° East
Transponder	1	5	C9H
D/L Frequency	10.9857 MHz (Ku-Band)	4119 MHz (C-Band)	3960 MHz (C-Band)
Symbol Rate	7.2 MS/s	7.2 MS/s	27.5 MS/s
FEC	¾	3/4	3/4
Polarization	Horizontal	RH Circular	Horizontal

Figure 6 Satellite coverage for Europe, MEA and Asia

* Argentina, Paraguay and Uruguay use a PAL-N variation but receive via satellite a 525 NTSC signal.
** Some countries in Asia like Japan, China, South Korea Philippines and some Pacific Island Nations use NTSC.

Configuring the RX8200

The most efficient way to configure an RX8200 is via its web-based management interface. It is also possible to configure most of the receiver functionality through the front panel menu control buttons.

3.2 USING THE RECEIVER FRONT PANEL MENU SYSTEM

- The four arrow pushbuttons are used to navigate through the receiver menu system. Each arrow pushbutton backlight is illuminated when a further menu can be reached by pressing that pushbutton.
- The edit and save pushbuttons are used to modify User Settings within the menu system. The edit pushbutton backlight is illuminated when the current menu contains a User modifiable setting. To modify a User Setting within a menu, press the edit pushbutton and then use the up and down pushbuttons to change the User Setting. During this edit operation, both the edit and save pushbutton backlights will be illuminated. If a menu contains more than one modifiable User Setting then the left and right pushbuttons are used to select which User Setting will be edited. When a User Setting has been modified, the save pushbutton should be pressed to confirm and action this new User Setting.
- Configure the IP addresses of this receiver for access to the Management and IP Data network interfaces. Once the management IP address has been configured to the desired address, the remainder of this receiver configuration can be done through its Internet browser page.

3.3 CONFIGURATION OF RX8200 ON RLS – FRONT PANEL CONTROL

- Go to Menu 3.2 and select RF INPUT 1. The Receiver can take its signals from four sources. Set-up source 1.
- Scroll to Menu 3.2.2.1. Enter the LNB FREQUENCY then press **Save**. This sets up the LNB frequency for the selected Source in MHz.
- Scroll to Menu 3.2.2.2. Enter the SATELLITE FREQUENCY then press **Save**. This sets up the Satellite frequency for the selected Source in MHz.
- Scroll to Menu 3.2.2.3. Enter the SYMBOL RATE then press **Save**. Sets the symbol rate for the selected Source in Msymbol/s.
- Scroll to Menu 3.2.2.4. Enter the DVB Modulation Standard then press **Save**. This sets up the DVB modulation Standard (DVB-S or DVB-S2). FEC detection is automatic. Currently, this is DVB-S for RLS.
- Scroll to Menu 3.2.2.7. Enter the SEARCH RANGE then press **Save**. This sets up the centre frequency Search Range for the selected Source in kHz. Set this value to 5000kHz.
- Scroll to Menu 3.2.2.10. Enter the LNB POWER as either On or Off and then press **Save**.

3.3.1. DEFAULT IP ADDRESS – FRONT PANEL CONTROL

The default IP addresses for the Management Control and the IP Output for WNE content can be configured from the front panel.

Management Control 2 – Menu 1.1.3

As per **Figure 7**, this IP address should be set as per the client site requirements.

IP Out 2 and MAC Address – Menu 6.5.2 and 6.5.3

This value should be set as **172.16.2.2**. Gateway address can remain as per the default setting.

**Note down the MAC address of this IP Output for the ICA Team in London.

3.4 CONFIGURATION OF NETWORK ACCESS

Access to the RX8200 should be configured on a client site as shown in the **Figure 7** below. The management address of the RX receiver and the second WNE Server IP address should be on the same network as the clients' local area network (LAN).

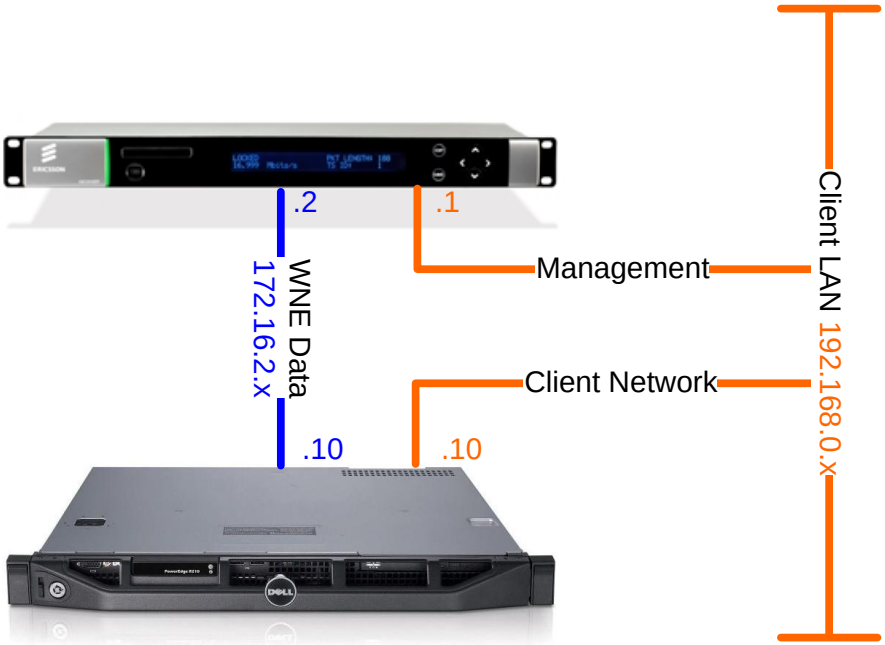


Figure 7. Recommended Network Configuration Setup-Example IP Address

If a client network is not available at the time of installation then the configuration of these machines can be setup as follows. Either using a CTS laptop on the client site or directly to the Dell Server or WNE PC if necessary.

Figure 8. No Client Network Setup

3.5 CONFIGURATION OF RX8200 ON RLS – BROWSER INTERFACE

Access the RX receiver from a browser interface. Depending upon the configuration option chosen above, this could be done from a browser on the WNE Server or from another PC on the client network. Type the IP address assigned to the Management interface of the RX unit into an Internet Browser page.

In this example http://192.168.0.2 has been used. Provided that the network is correctly configured, the following status page will be displayed.

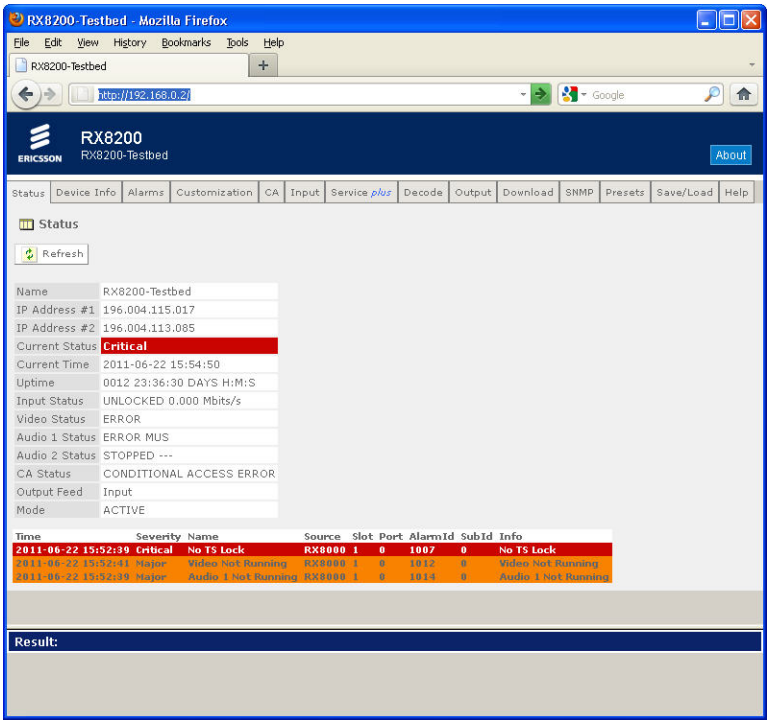

RX8200-Testbed - Mozilla Firefox
File Edit View History Bookmarks Tools Help
RX8200-Testbed
http://192.168.0.2/
RX8200
RX8200-Testbed
About
Status Device Info Alarms Customization CA Input Service plus Decode Output Download SNMP Presets Save/Load Help
Status
Refresh
Name RX8200-Testbed
IP Address #1 196.004.115.017
IP Address #2 196.004.113.085
Current Status Critical
Current Time 2011-06-22 15:54:50
Uptime 0012 23:36:30 DAYS H:M:S
Input Status UNLOCKED 0.000 Mbits/s
Video Status ERROR
Audio 1 Status ERROR MUS
Audio 2 Status STOPPED ---
CA Status CONDITIONAL ACCESS ERROR
Output Feed Input
Mode ACTIVE
Time Severity Name Source Slot Port AlarmId SubId Info
2011-06-22 15:52:39 Critical No TS Lock RX8000 1 0 1007 0 No TS Lock
2011-06-22 15:52:41 Major Video Not Running RX8000 1 0 1012 0 Video Not Running
2011-06-22 15:52:39 Major Audio 1 Not Running RX8000 1 0 1014 0 Audio 1 Not Running
Result:

Figure 9 Home Status Page

Alarm messages will be displayed on this *Status* page until all RLS and WNE configurations have been completed. Select the *Input* tab, then select *Input Source* and *Primary Input* as **SAT** and select *Apply Changes* to store this configuration.

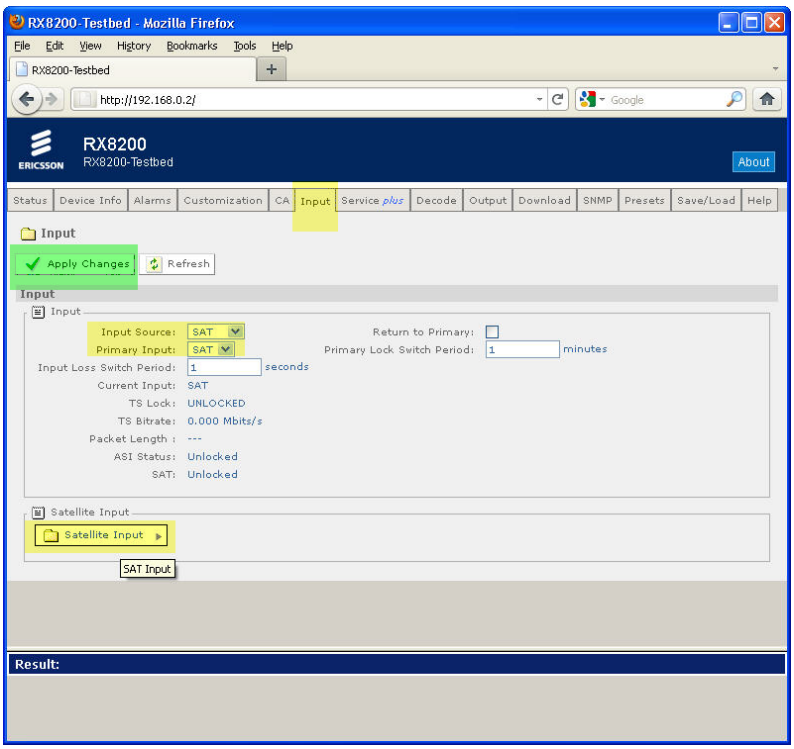


Figure 10. Satellite Input

Select the *Satellite Input* tab at the bottom of the browser page.You will now see a list of the L-band inputs. The RF signal from the satellite dish should be connected to Input 1 as shown in **Figure 1**.

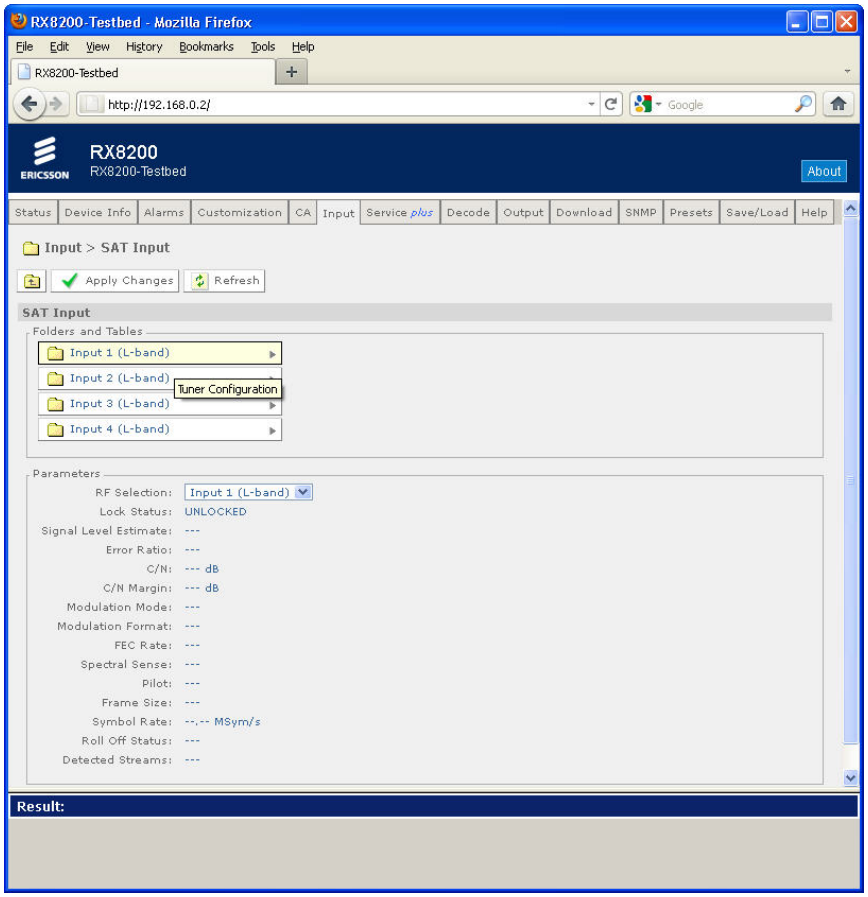


Figure 11 Satellite Input Screen

Configure the satellite input parameters for the client site. Please use the Global Satellite Coverage options in this document to determine the local settings required for your client region. Ask a client engineering representative for the frequency details of the LNB connected to their in-house satellite dish.

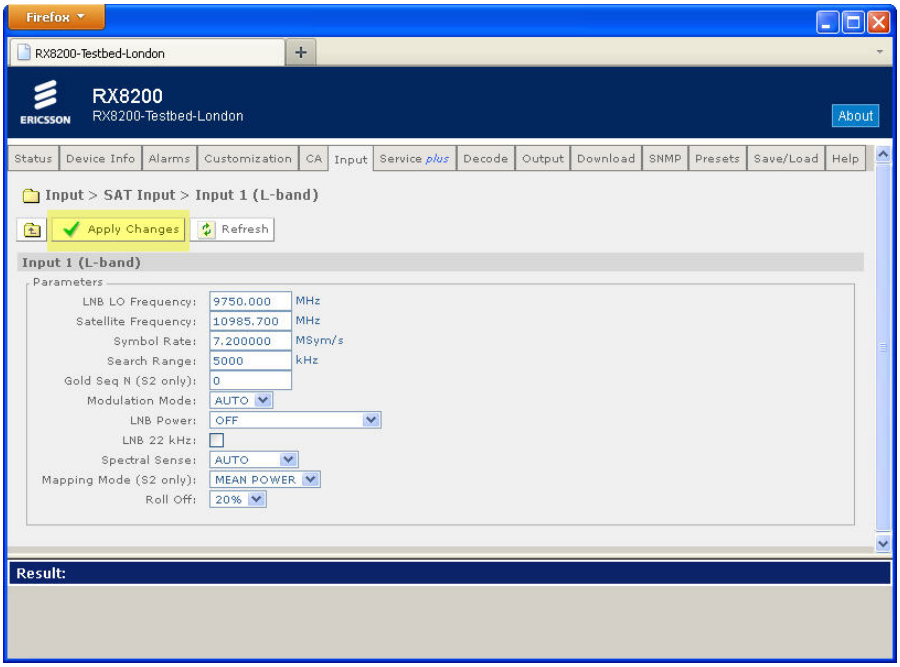


Figure 12 L-band Input 1 Configuration

When all the configuration parameters have been entered click on the *Apply Changes* tab to ensure the settings are saved.

The RX8220 receiver should now be tuned into the RLS service and the Front Panel LED of the RX8200 should have changed to an Orange colour.

3.6 SETTING UP THE SATELLITE RECEIVER ON WNE

Two multicast addresses exist to distinguish between PAL/625 and NTSC/525 on Reuters WNE (i.e.), each broadcast stream exists on a separate multicast address.

These addresses are provided below:

Standard	IP Address	MAC Address Hexadecimal
525	224.14.14.**14**	01:00:5E:0E:0E:**0E**
625	224.14.14.**15**	01:00:5E:0E:0E:**0F**

Figure 13. Multicast Addresses on WNE

To configure the transmission standard specific to your region, navigate to the *Decode* tab of the RX receiver browser page.

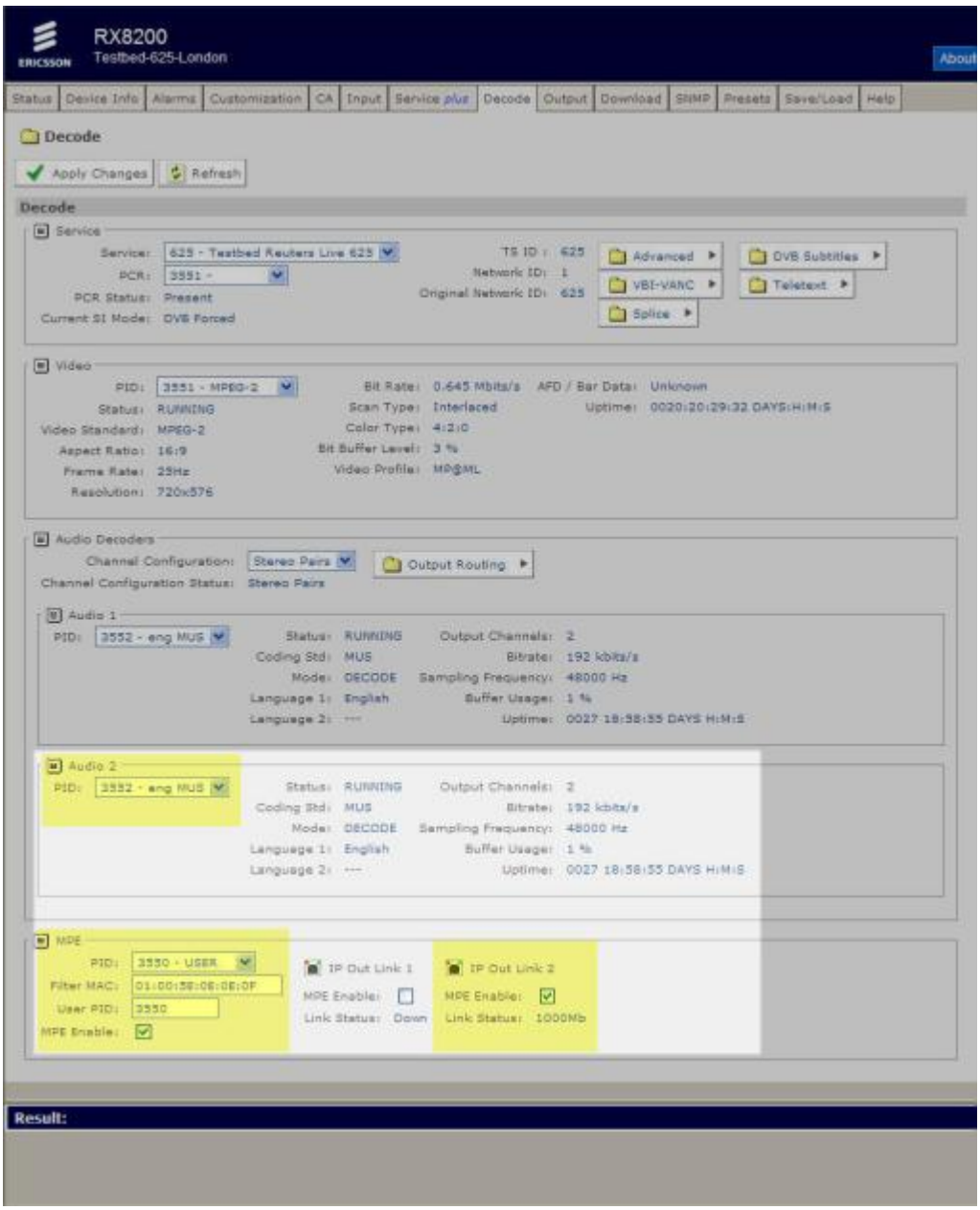


Figure 14. Configuring Multicast MAC Address and PID

Within the **Audio 2** section, make sure to manually select PID 3552.

Within the **MPE** section, make sure the following information is included:

- *PID:* – From the drop down tab, the PID 3550 – USER should be available once the receiver is tuned into RLS. If not then a 0 – USER PID will be displayed which can also be selected.
- *Filter MAC:* - Enter the MAC address as shown in **Figure 13** above for your client region.
- *User PID:* - 3550
- *MPE Enable:* - Select this box.
- Also ensure that the *MPE Enable* tick box is enabled for **IP Out Link 2** and then click *Apply Changes* to store this configuration.

3.7 CHANGING THE IP OUTPUT IP ADDRESS

The configuration page for changing the IP Output Interface is located under the *Output* tab.

As this network Interface directly connects to the WNE Server the IP address convention used globally is 172.16.2.2.

Select the *Tx Enable* tab so that this interface is active. A Green tick mark should be displayed in the box.

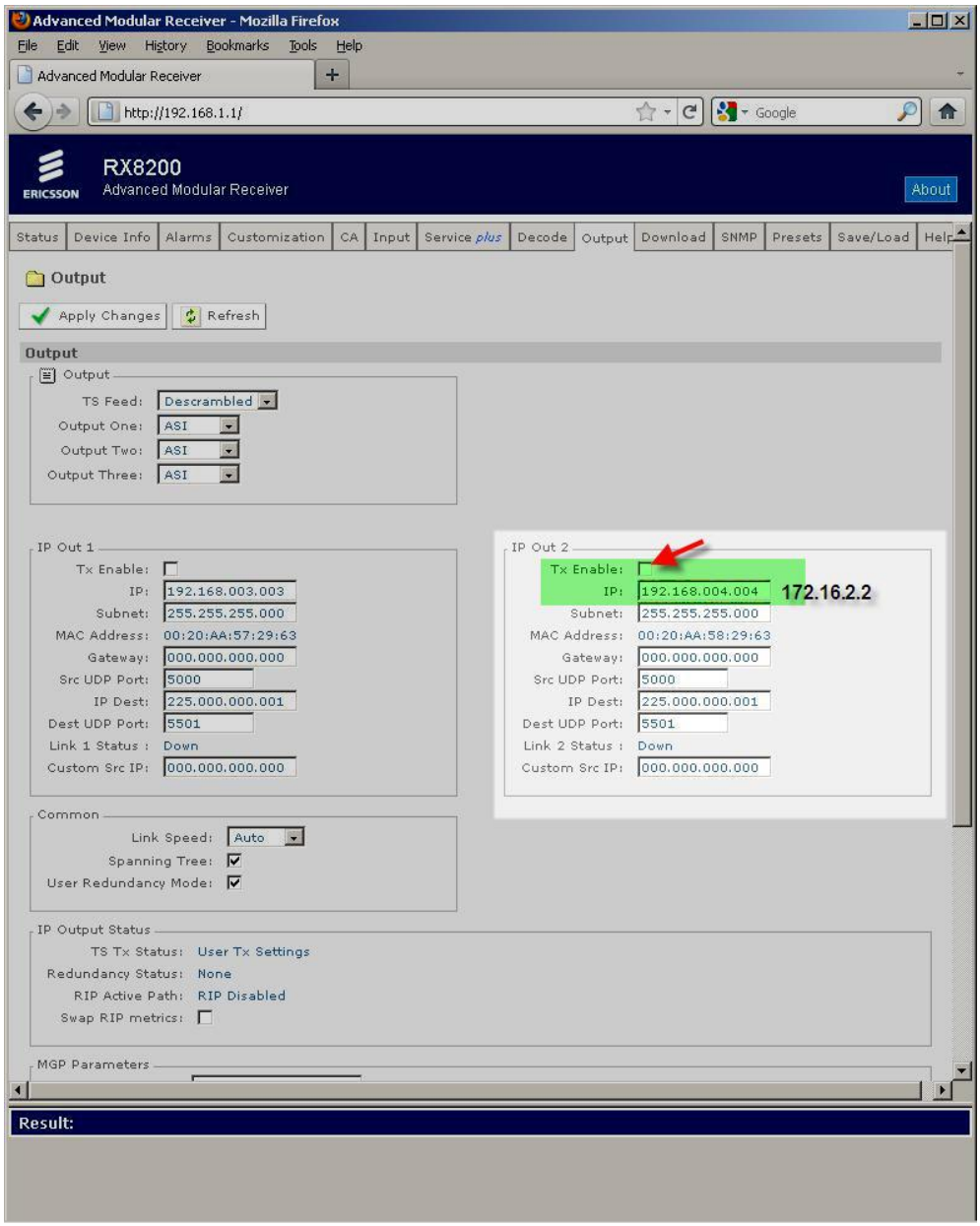


Figure 15. IP Output Interface 2 – Default Settings Shown

Once the IP address has been changed, ensure to select *Apply Changes* to store this new IP address.

3.8 RECORDING THE MAC ADDRESS

Similar to the EMR satellite receiver, the RX receiver also needs its MAC address recorded and provided to the ICA team in London. The physical MAC address is located under the Output menu under IP Out 2.

All MAC addresses will be 12 digits long. Please record this value accurately as it is used to control client permissions.

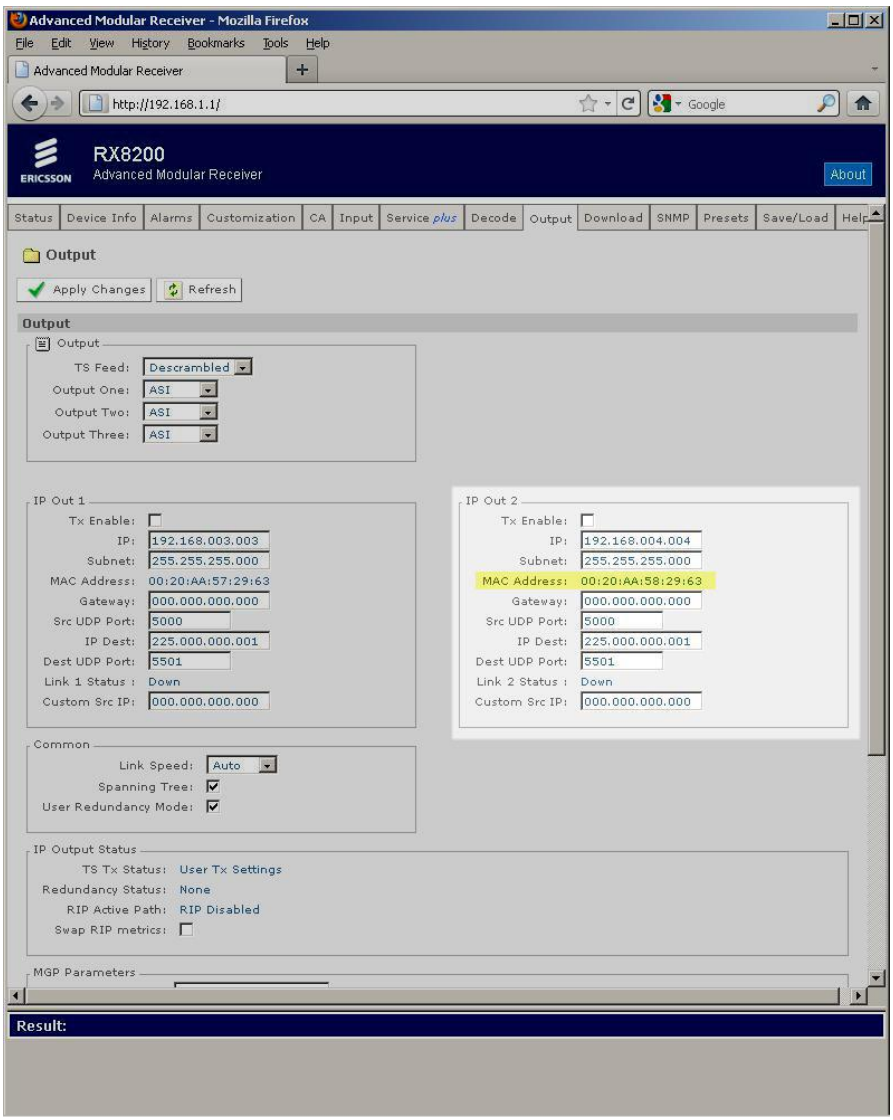


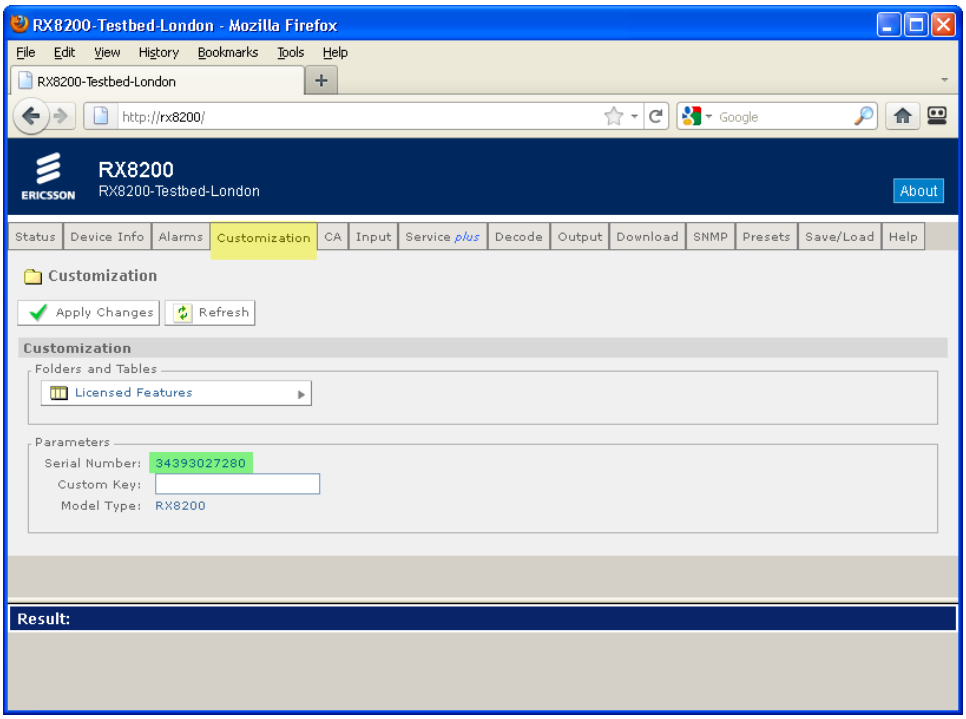
Figure 16. Location of RX8200 MAC Address for IP Output 2

MAC Address example shown above – **00-20-AA-58-29-63**

3.9 RECORDING THE UNIQUE HARDWARE ID

The Unique Hardware ID is required by ICA in London to control the encryption permissions for Reuters RLS content. This information must be accuractly recorded and given to the ICA tesm in London.

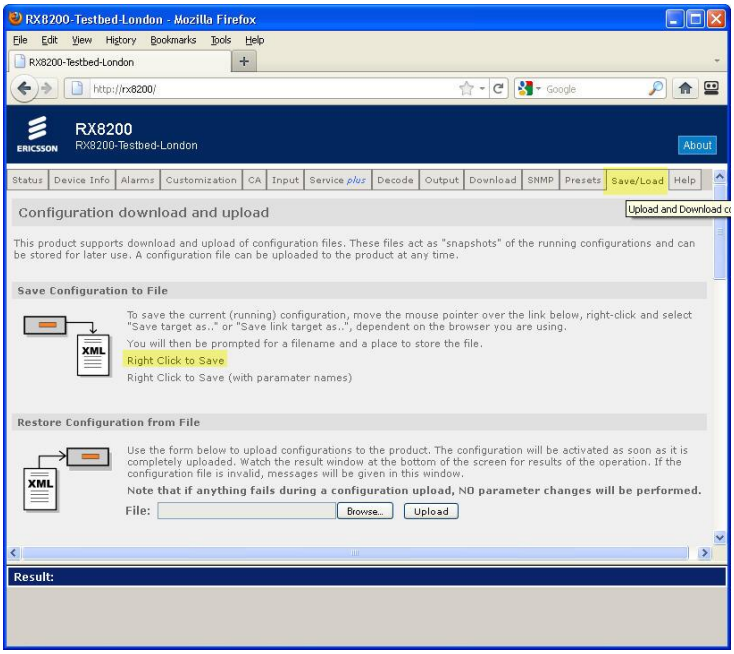
The Hardware ID can be found in one of two locations on an RX8200. On the web management interface as shown below under the Customization tool.



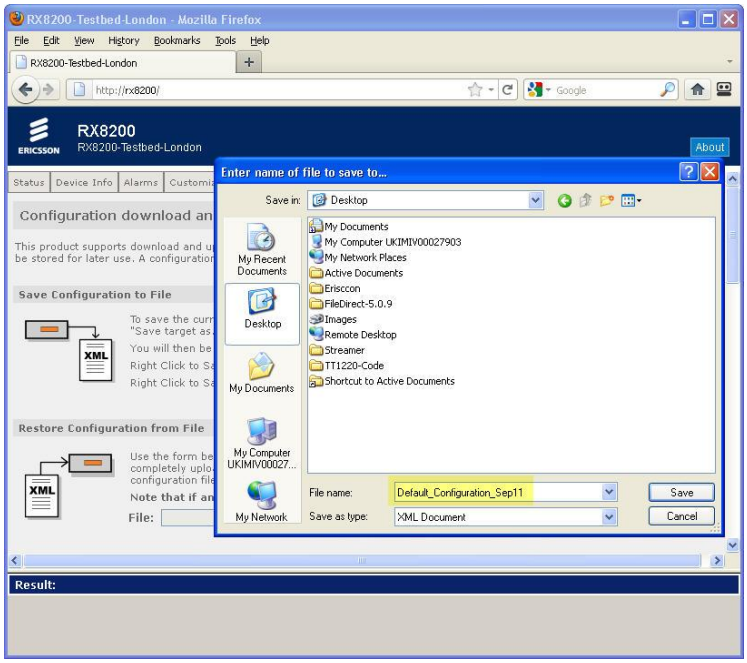
The Hardware ID can also be seen on the front panel display of the RX8200 under menu option 5.2.3

3.10 SAVING A CONFIGURATION FILE

The RX receiver automatically saves each configuration setting as an active profile setting. It is possible to store a configuration as an xml file that can be used to restore an RX8200 receiver. Browse to the *Save/Load* tab.


RX8200-Testbed-London - Mozilla Firefox
RX8200
RX8200-Testbed-London
About
Status
Device Info
Alarms
Customization
CA
Input
Service plus
Decode
Output
Download
SNMP
Presets
Save/Load
Help
Configuration download and upload
This product supports download and upload of configuration files. These files act as "snapshots" of the running configurations and can be stored for later use. A configuration file can be uploaded to the product at any time.
Save Configuration to File
To save the current (running) configuration, move the mouse pointer over the link below, right-click and select "Save target as.." or "Save link target as..", dependent on the browser you are using.
You will then be prompted for a filename and a place to store the file.
Right Click to Save
Right Click to Save (with paramater names)
Restore Configuration from File
Use the form below to upload configurations to the product. The configuration will be activated as soon as it is completely uploaded. Watch the result window at the bottom of the screen for results of the operation. If the configuration file is invalid, messages will be given in this window.
Note that if anything fails during a configuration upload, NO parameter changes will be performed.
File:
Browse...
Upload
Result:

Under the *Save Configuration to File* section *Right Click* to save the settings entered in the satellite receiver.

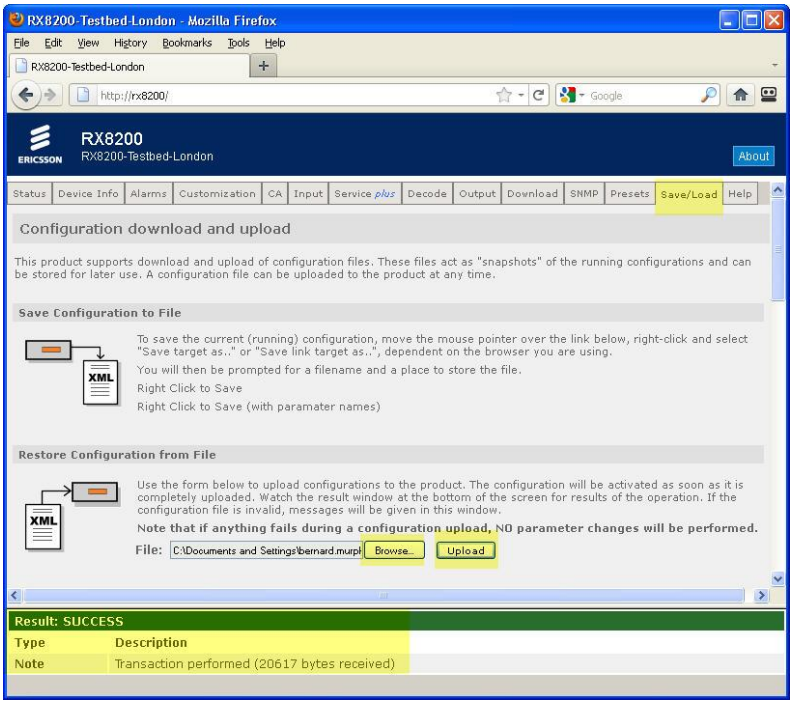


Create a logical name for this configuration file e.g. *<client name>_<Configuration Type>_<Date>.xml.* This configuration can be saved to the Desktop or some other logical location on the PC being used to browse to the RX8200.

A Reuters Engineer may wish to take a copy of this for their own client records.

3.11 RESTORING A CONFIGURATION FILE

From the *Save/Load* configuration tab on the RX8200 interface, select the Browse option under *Restore Configuration from file* and locate the appropriate xml configuration file. Once selected, click on the *Upload* button to apply the configuration.


RX8200-Testbed-London - Mozilla Firefox
File Edit View History Bookmarks Tools Help
RX8200-Testbed-London
http://rx8200/
RX8200
RX8200-Testbed-London
About
Status Device Info Alarms Customization CA Input Service plus Decode Output Download SNMP Presets Save/Load Help
Configuration download and upload
This product supports download and upload of configuration files. These files act as "snapshots" of the running configurations and can be stored for later use. A configuration file can be uploaded to the product at any time.
Save Configuration to File
To save the current (running) configuration, move the mouse pointer over the link below, right-click and select "Save target as.." or "Save link target as..", dependent on the browser you are using.
You will then be prompted for a filename and a place to store the file.
Right Click to Save
Right Click to Save (with paramater names)
Restore Configuration from File
Use the form below to upload configurations to the product. The configuration will be activated as soon as it is completely uploaded. Watch the result window at the bottom of the screen for results of the operation. If the configuration file is invalid, messages will be given in this window.
Note that if anything fails during a configuration upload, NO parameter changes will be performed.
File:
Browse...
Upload
Result: SUCCESS
Type
Description
Note
Transaction performed (20617 bytes received)

Once the configuration file has been accepted you'll see a Result SUCCESS notification at the bottom of the browser window.

3.12 RESET TO FACTORY DEFAULTS

To clear current configuration settings, either overwrite an existing configuration profile or reset the configuration parameters.

The reset can be done under the *Device Info* page and does not reset the IP address. Select the *Reset Parameters to Factory Defaults.*

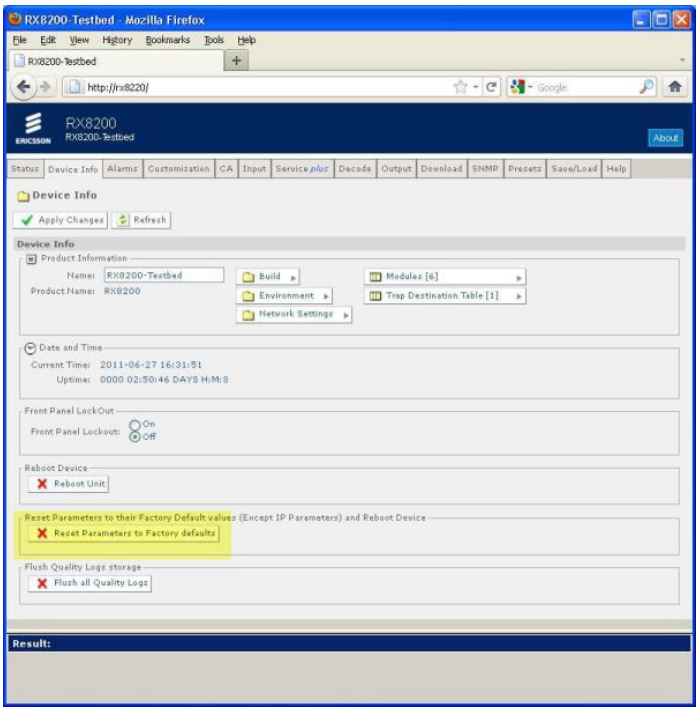


Figure 4. Reset Factory Defaults

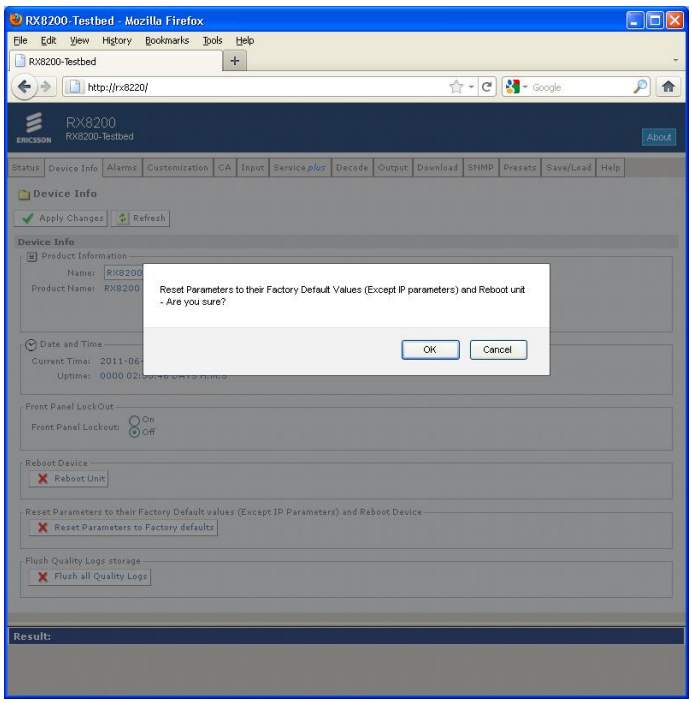


Figure 5. Confirm Factory Reset

4 TROUBLESHOOTING

4.1 UNABLE TO LOCK TO THE WNE SIGNAL

Items to verify:

- Confirm that the Input source is selected as SAT (for satellite feed) as shown in **Figure 10**. Also ensure that the Primary Input is configured as SAT.
- Confirm that you've selected the correct multicast address to filter WNE Data as shown in **Figure 13**.
- Verify the LNB values that have been entered (refer to **Figure 12**). Several WNE installations have uncovered a different LNB value when examined by an engineer. For example, if it is believed that a 10GHz LNB is installed, try altering the L-Band frequency value by ± 500MHz. Popular LNB values tend to be 9.5GHz, 9.75GHz, 10GHz, and 10.5GHz.
- Check the quality of the RF coaxial cable connecting to the RX8200. The F connector is a coaxial RF connector commonly used for "over the air" terrestrial television, cable television and universally for satellite television and cable modems, usually with RG-6/U cable or, in older installations, with RG-59/U cable.

4.2 NOT GETTING IP DATA FROM WNE

- Is the IP Output Port enabled as shown in Figure 14. IP data will not be output from the RX receiver until this port is enabled.
- Check that the physical ethernet cable is connected to Port 2 and not Port 1
- Check that the MPE Enable check box is enabled under the Decode tab and item MPE as shown in **Figure 14**.
- Can you ping Port 2? Open a command prompt and ping 172.16.2.2. If not, then the issue lies with either the cable used to connect to the receiver or there is an issue with the network connection.
- Have you tried rebooting either the WNE Server and/or the RX8200 decoder?

5 FAQS

5.1 DOES THE RX8200 RECEIVER WORK WITH THE OLDER WNE PCS?

This receiver performs the same function as the older SkyStream EMR receivers. It is designed to detect the IP data (WNE) contained within the Reuters stream and pass this data to any of the WNE PCs or Dell server.

5.2 WHAT TYPE OF LNB SHOULD BE USED ON A SATELLITE DISH FOR RECEIVING WNE?

The Reuters recommended specifications for each type of LNB (KU and C Band) are listed below:

K_U Band

SMW LNB Single - Swedish Microwave - http://www.smw.se/

Figure 6. A Light Single Ku Band LNB

C Band

C-Band & Ku-Band Digi-Ready LNBs – California Amplifier - http://www.calamp.com/

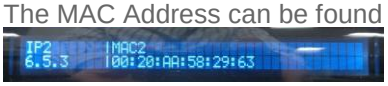
Figure 7. Extended C-Band Professional II LNB

APPENDIX 1

1.1 MAC ADDRESS CHANGE – REPLACING AN EMR RECEIVER WITH AN RX8200.

The onsite client scenario will be as follows.

1. Existing client installed with a configured EMR satellite receiver. The MAC address (Ethernet 2) of the EMR is being used for encryption and decryption of video files arriving on the WNE PC/Server.
2. WNE software scans for the MAC address on the EMR and confirms that this is the correct MAC address for this client installation.
3. During the swap out process the RX8200 receiver will replace the EMR and a new MAC address will be seen by the WNE software.
4. Once the RX8200 starts to receive new WNE files, no new video content will be decrypted until the new MAC address of the RX8200 is passed to the ICA Team in London so that the client records can be updated. Please note that a restart of the WNE Software (i.e. the Reuters WNE File Processor) is required at this time.
5. The MAC Address can be found from the front panel display of the RX8200 unit under menu 6.5.3.



6. Record this MAC Address and inform ICA as soon as possible of this change – no new video will be decrypted until this change is implemented.
7. Is it possible that you've changed some configuration values during this installation and forgotten to *Apply Changes*?

1.2 ICA CONTACTS

The generic email address for ICA in London is - ica.london@thomsonereuters.com

The ICA Team: Office Hours – 8am – 6pm GMT – Monday-Friday

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TV Support London (Outside ICA Hours**):** 7 Days a Week

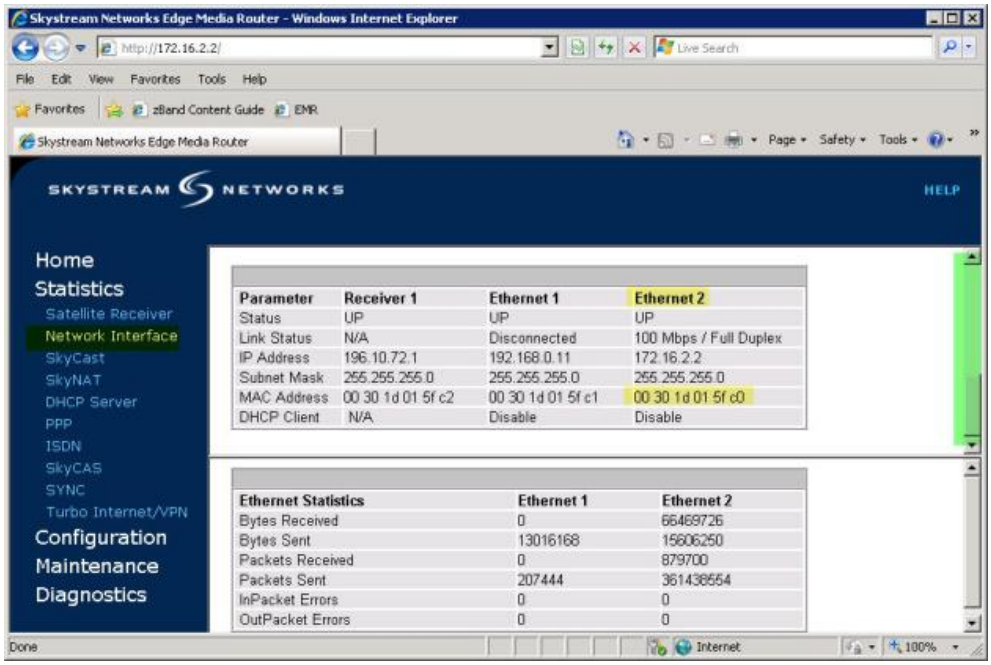
8am-7pm & 8pm 7am - +44 (0).20.7542.4709

APPENDIX 2

2.1 CHECKING EXISTING EMR MAC ADDRESS

1. An EMR browser page can be accessed through the any browser window on a PC connected to Ethernet 2 on the receiver.
2. Open a browser window and type the default IP address of the EMR – 172.16.2.2.

3. You will be prompted for a user name and password to access the unit. The username is *emradmin* with no password.
4. Select Network Interface under Statistics and scroll down for the Ethernet 2 MAC address.


Skystream Networks Edge Media Router - Windows Internet Explorer
SKYSTREAM NETWORKS
HELP
Home
Statistics
Satellite Receiver
Network Interface
SkyCast
SkyNAT
DHCP Server
PPP
ISDN
SkyCAS
SYNC
Turbo Internet/VPN
Configuration
Maintenance
Diagnostics
Parameter | Receiver 1 | Ethernet 1 | Ethernet 2
Status | UP | UP | UP
Link Status | N/A | Disconnected | 100 Mbps / Full Duplex
IP Address | 196.10.72.1 | 192.168.0.11 | 172.16.2.2
Subnet Mask | 255.255.255.0 | 255.255.255.0 | 255.255.255.0
MAC Address | 00 30 1d 01 5f c2 | 00 30 1d 01 5f c1 | 00 30 1d 01 5f c0
DHCP Client | N/A | Disable | Disable
Ethernet Statistics | Ethernet 1 | Ethernet 2
Bytes Received | 0 | 66469726
Bytes Sent | 13016168 | 15606250
Packets Received | 0 | 879700
Packets Sent | 207444 | 361436554
InPacket Errors | 0 | 0
OutPacket Errors | 0 | 0
Done
Internet
100%

APPENDIX 3 RX8200 TECHNICAL SPECIFICATIONS

3.1 PHYSICAL & POWER

- Dimensions: (W x D x H) 442.5 x 545 x 44mm (17.5“ x 20.7“ x 1.75“ approx.)
- Input Voltage: 110 VAC / 240 VAC
- Power Consumption 120W Max. (depending on options fitted)
- Rack height: 1 RU

3.2 CONTROL

- Front panel keypad and LCD
- SNMP control, traps and alarms
- Web browser
- IP High Speed Data: MPE based data de-encapsulation Max. bit-rate: 100 Mbps

3.3 SATELLITE INPUT OPTIONS

- Connector: 4x F-Type (F), 75 Ohm
- Modulation: DVB-S QPSK
- Receiving Frequency: 950 MHz – 2150 MHz
- Input level: -25 dBm to -65 dBm
- LNB Power: 13V, 18V or off, 22 kHz on/off
- FEC, DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8
- LNB Power: 13V, 18V or off, 22 kHz on/off

3.4 VIDEO DECODING OPTIONS

- 4:2:0 Decoding
- MPEG-2 SD Decode
- Profiles: MP@ML
- Max video rate: 15 Mbps (MP@ML)
- Video format: 480i and 576i 29.97, 25 fps

3.5 VIDEO OUTPUT OPTIONS

- SD Video Output Composite Video
  - Connector: 2x BNC (F) 75 Ohm
  - Format: PAL / NTSC
- SDI/DVB ASI-C (Switchable)
  - Connector: 2x BNC 75 ohms
  - SD-SDI standard: SMPTE 259M
  - Embedded Audio: SMPTE 272M (SD)
  - Embedded Audio

3.6 IP INPUT OPTIONS

- MPEG over Gigabit Ethernet IP Input
- Connector: 2 x RJ 45
- Format: 100/1000BaseT
- Max. input rate: 208Mbps

3.7 IP HIGH SPEED DATA

- MPE based data de-encapsulation
- Max. bit-rate: 100 Mbps

3.8 GLOSSARY OF ABBREVIATIONS

Abbreviation/Term	Description
C-Band	C Band is the original frequency allocation for communications satellites. C-Band uses 3.7-4.2GHz for downlink and 5.925-6.425Ghz for uplink.
DVB	Digital Video Broadcasting
FEC	Forward Error Correction is a system of error control for data transmission, wherein the sender adds redundant data (also known as an error correction code) to its messages.
GUI	Graphic User Interface
IFL	Generically, IFL (Intra-Facility Link) refers to a cable which runs between two facilities. In satellite usage, the term IFL refers to the cable which connects the ODU (Out-Door-Unit) with the IDU (In-Door-Unit).
IP/DVB	This is the phrase used to describe the delivery of IP content over a DVB satellite network.
K_u Band	The K_u band (pronounced "kay-yoo") is a portion of the electromagnetic spectrum within the microwave range of frequencies. K_u band is primarily used for satellite communications particularly from remote locations back to a television network's studio for editing and broadcasting.
LAN	Local Area Network
L-Band	L band is a frequency range between 390MHz and 1.55GHz which is used for satellite communications and for terrestrial communications between satellite equipment. An LNB is used to convert Ku and C Band frequency bands to L band, which can be transmitted over the IFL and processed by the IDU.
LNB	A low-noise block converter (LNB, for low-noise block, or sometimes LNC, for low-noise converter) is the (receiving, or downlink) antenna of a satellite dish commonly used for satellite TV reception.
LO	A device used to output the frequency of an incoming modulated radio-frequency carrier signal, to produce the required intermediate frequency.
MPEG	Motion Pictures Experts Group. Video file format.
NIC	Network Interface Card
PID	(Process IDentifier) A temporary number assigned to a process or service.
MPE	Multiprotocol Encapsulation, is a Data link layer protocol that provides a means to carry packet oriented protocols (like for instance IP) on top of MPEG transport stream (TS).
WNE	World News Express - IP file-based delivery system for Reuters news content.
RLS	Reuters Live Service - Linear-based delivery system for Reuters news content.

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